

NEWS RELEASE

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Kevin Herglotz (202)

720-4623

USDA RESEARCH CENTER SEVERELY DAMAGED IN TORNADO

BELTSVILLE, Md. Sept. 25, 2001—Agriculture Secretary Ann M. Veneman today surveyed the damages at the U.S. Department of Agriculture's Henry A. Wallace Beltsville Agricultural Research Center (BARC) in the wake of the tornado that battered Northern Prince George's County at approximately 5:30 p.m. last night. No one was hurt, but the Center's headquarters buildings along Route 1 sustained major structural damage.

The Beltsville center is operated by USDA's Agricultural Research Service.

"The tornado caused extensive damage to the roof of approximately fifteen buildings on the Center's west side along Route 1 in Beltsville," said Veneman. "In addition, high winds structurally damaged and blew out the glass in most of the research greenhouses."

Windows were blown out of some of the buildings, and in some rooms, window air conditioning units were blown from their wooden frames and into the rooms. In addition to the substantial damage incurred at the greenhouses, a great deal of time-consuming research was lost. Approximately fifty government vehicles on the station had damage ranging from minor to irreparable.

BARC facilities are located on both sides of Route 1 in Beltsville, with the bulk of the research activities on the eastern side of the 7 thousand acre research farm. Although no structural damage occurred on BARC's east side, the facility today had no electrical power because of damage to the Capital Cherry Hill electrical substation that provides electricity to the area.

"All of our animal facilities on the east side are running on emergency generators today," said Phyllis Johnson, the director for ARS' Beltsville area. "None of the animals were harmed in the storm."

No estimates were available on the likely cost of repairing the Beltsville research center. Agency officials toured the facility earlier today to assess the damage.

In addition to the damages at BARC, the National Agricultural Library, also located off Route 1 in Beltsville, had several broken windows but no interior damage, according to a library spokesman.

The headquarters buildings at the Beltsville Agricultural Research Center are a combination of administrative and laboratory space, Johnson said.

Tornado Strikes BARC

By Ron Koreak
Associate Director
USDA-Ag Research Service
Beltsville, MD

At 5:30 p.m. on Monday, September 25, 2001, the Henry A. Wallace Beltsville Agricultural Research Center (BARC) – West campus was struck by a tornado. This was the same tornado that touched down at the University of Maryland and then traveled north towards Beltsville.

Fortunately no one was injured; however, there was extensive damage.

Fifteen buildings along Route 1 received significant roof damage, and windows in several research buildings were blown out, causing extensive damage to laboratories and offices. Window air conditioners were literally blown in, landing on office and laboratory floors. BARC has about 135,000 square feet of greenhouses. Within a few moments, over 30,000 square feet of greenhouses were totally destroyed; the remaining greenhouses all suffered damage ranging from severe to slight. An on-site construction trailer was blown into one of the greenhouse units.

There was no electric power to the West Side for almost two days, while power was out on the BARC-East campus for about one day. Besides the power outage, there was no other damage to the BARC-East campus.

While we are still assessing losses, initial estimates are in the tens of millions of dollar range.

Besides the obvious losses, we are still examining the value of samples and reagents that were in deep freezers and the status of all sorts of laboratory equipment. The monetary value of the lost plant material in the greenhouses may never be fully known. Many research projects are looking at a one- to three-year setback due to lost plant materials.

We are very fortunate to have in-house facility and farm crews with heavy equipment. They have worked hard to clear away downed trees and other debris in a timely manner as well as helping to get research programs up and running.

If you have visited BARC in the past you may not recognize the BARC-West campus on your next visit. The trees and shrubs that made up our landscape are now simply gone. However, our

dedicated technical and support staff, working together, will not only return our landscape but also continue to do research and help to solve important agricultural problems.

(View photographs of the tornado's aftermath at our web site: www.ha.ars.usda.gov.)

Tornado damage totals increase

Property losses high at USDA Beltsville research facility

By LARRY CARSON
SUN STAFF

State and private losses from the tornado that slashed through Prince George's and Howard counties Monday evening totaled more than \$31.7 million, state officials estimated last night.

The losses included an estimated \$15 million at the University of Maryland, College Park, private residences valued at \$4.5 million in Laurel and elsewhere in Prince George's County, \$1.2 million in lost or damaged vehicles, \$4 million worth of Potomac Electric Power Co. utility poles and lines, and \$5 million worth of damaged landscaping and lost trees.

Maryland Gov. Parris N. Glendening is weighing a decision on whether to seek federal disaster assistance to help cover the costs of repairs and replacements, according to Quentin Banks, an official at the Maryland Emergency Management Agency, which released the state estimate.

Federal aid is generally granted if uninsured losses total more than \$5 million. Banks said Maryland's uninsured losses appear to fall far short of that threshold. Still, Maryland could be eligible for federal aid based on the severity of the impact of the storm, he noted.

If Glendening decides to petition President Bush for aid, the proposed assistance must be reviewed and approved by the Federal Emergency Management Agency.

The state estimate did not include [See Storm, 10a]



ASSOCIATED PRESS

College Park: Emergency personnel sift through the debris after a tornado wrecked the Maryland Fire and Rescue Institute on the University of Maryland campus.

USDA Beltsville facility sustains heavy damage

[Storm, from Page 1a]

losses possibly totaling more than \$41 million at the U.S. Department of Agriculture's Beltsville Agricultural Research Center, where 15 buildings were damaged and 80-year-old trees were destroyed.

"We're still trying to figure out what the damage estimate is," said Beltsville spokeswoman Sandy Miller Hays yesterday. "We're looking at 15 buildings and whole ranges of greenhouses."

The greenhouses date from the 1930s and were ruined. Offices with air conditioners in the windows were damaged further when the heavy appliances popped free and shot across the rooms, she said.

Miraculously, none of the 1,400 Beltsville employees or farm animals was hurt in the storm, though years of plant experiments were destroyed.

Hays said that because the 7,000-acre USDA facility has its own farm crews and equipment, they've been able to get started immediately on cleaning up.

"It looks like a war zone. Huge trees have been ripped out of the ground. It's really heartbreaking to see," she said.

At the University of Maryland campus, the estimate of \$15 million includes damage to 12 buildings.

Ambling Companies Inc., own-

ers of a private apartment complex on University Boulevard that was home to 700 students before substantial damage from the storm, announced a donation yesterday of \$10,000 to the university's tornado victim fund.

Three more campus apartment buildings are to reopen to students tomorrow, which will leave 348 people living with friends or in hotels for up to two more weeks while repairs are made, a university spokeswoman said.

Fifty state prison inmates helped clean up debris in College Park yesterday. Inmates from the Herman L. Toulson Boot Camp who normally pick up trash along roads were sent to College Park, said Division of Correction Commissioner William W. Sondervan.

Meanwhile, workers continued cleaning debris in the North Laurel area of Howard County, where half of the 47 townhouses in the development of Settlers Landing were destroyed. Banks said the state did not have any estimate of the losses there.

James M. Irvin, director of public works in Howard County, said county crews have been withdrawn, but large trash containers and portable toilets will be left in the community for another week for residents to use.

mole rats within the shielded field and among control animals. But mole rats that built nests within active magnetic fields showed strong activity in a layer of a brain region called the superior colliculus. This part of the brain is a neural way station known to collect spatial cues and direct orienting behavior.

"This study makes wonderful sense," says neuroscientist John Phillips of Virginia Polytechnic Institute and State University in Blacksburg. Until now, Phillips adds, most researchers have been hunting for sensory receptors that detect magnetic fields rather than studying areas that are responsible for more complex processing. Walker says this study may help knit the neuroscience efforts together. "We're on the edge of a coherent story, from detector cell to behavioral response," Walker says. "If there is a general magnetic sense for vertebrates, we should be able to see common mechanisms." With such diverse species as turtles and mole rats offering insights, he adds, the nature of navigation may finally be within reach.

—KATHRYN BROWN

AGRICULTURAL RESEARCH

Tornado Rips Apart Maryland Center

BELTSVILLE, MARYLAND—The funnel cloud was already teeming with glass shards, roof tiles, and tree branches when Autar Mattoo spotted it outside his window at the U.S. Department of Agriculture's Beltsville Agricultural Research Center (BARC) here. Seconds later it smashed windows in his research building and blew through the nearby cluster of greenhouses. "Shattered glass was everywhere. It looked like a war zone," recalls Mattoo, a molecular biologist. Moments earlier the tornado, which struck in the early evening on 24 September, had killed two students in a car at the nearby University of Maryland campus in College Park.

Although Mattoo and his colleagues at the world's largest agricultural research com-

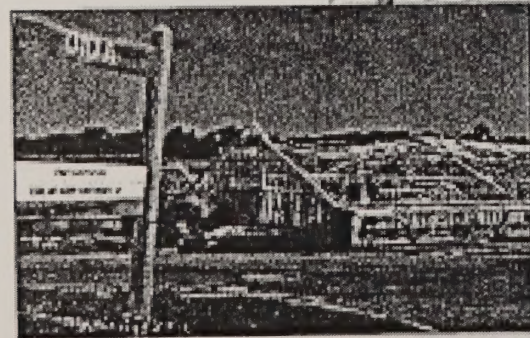
plex miraculously escaped the tornado's deadly force, their work setting was dealt a serious blow. BARC's director, Phyllis Johnson, estimates the destruction at \$20 million, including extensive damage to one-third of BARC's 8400 square meters of greenhouses. In addition to plants damaged by the flying debris, high winds, and exposure to the elements, a power outage of nearly 48 hours may have ruined numerous frozen tissue samples and collections.

Reconstructing clones, says Robert E. Davis, who heads BARC's molecular plant pathology lab, could take 2 or 3 years. Many of BARC's research projects are done in conjunction with other labs around the world, he notes, meaning that the delays will have repercussions elsewhere. A week later, even getting around the workplace remained a challenge. "There's so much shattered glass, we had to wear hard-hats when we went into the greenhouses," says plant pathology researcher Rosemarie Hammond, who is using plant viruses to produce vaccines for poultry and cattle.

At Mattoo's vegetable research laboratory—which uses biotechnology to complement classical breeding—transgenic tomatoes and potatoes in the greenhouses were toppled, cut by falling glass shards, and exposed to cool weather. Hundreds of tissue samples—collected over the years from transgenic plants—were ruined when the freezers shut off. "It's a great shame for our staff researchers and postdocs," he says. "In a matter of minutes, months of work was blown away."

Fortunately, the twister spared most of BARC's Animal and Natural Resources Institute and the Beltsville Human Nutrition Research Center. But it destroyed a \$130,000 remote-sensing van that BARC scientists had borrowed from NASA's Goddard Space Flight Center for help in survey-

ing soil moisture and temperature from space. Although BARC has a small emergency fund, the money needed to recover from the tornado must come from Congress, now completing work on the agriculture department's 2002 budget. —ROBERT KOENIG



Shattering experience. BARC's Autar Mattoo watched the tornado smash greenhouses and buildings at the research center.

Tornado strikes USDA Beltsville research campus

At 5:30 p.m. on Sept. 25, the Henry A. Wallace Beltsville Agricultural Research Center (BARC) — West campus was struck by a tornado. This was the same tornado that touched down at the University of Maryland and then traveled north towards Beltsville. Fortunately no one was injured; however, there was extensive damage.

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Besides the power outage, there was no other damage to the BARC-East campus.

Initial estimates are in the tens of millions of dollar range. Besides the obvious losses, scientists are still examining the value of samples and reagents that were in deep freezers and the status of all sorts of laboratory equipment.

The monetary value of the lost plant material in the greenhouses may never be fully known.

Many research projects are looking at a one- to three-year setback due to lost plant materials.

Trees and shrubs that made up the BARC landscape are now gone.

METRO

Tornado Wrecked Much Farm Research

Cost of Damage to USDA Greenhouses, Lab, Other Buildings Could Total \$41 Million

By AMY ANGETEINER
Washington Post Staff Writer

The tornado that ripped through the region Monday evening may have done as much as \$41 million in damage to the government's top agricultural science center, destroying several greenhouses and ruining years of crop and plant research.

If the Beltsville estimate holds, combined with preliminary estimates from the University of Maryland and Prince George's County, it could bring the total damage from Monday's deadly storm to well above \$70 million. Howard County officials have not released an estimate of damage there.

Fifteen buildings at the 7,000-acre Beltsville Agricultural Research Cen-

ter were damaged, including one that lost its roof and a laboratory where the wind blew out every window and smashed countless chemical containers.

Officials are calculating the exact cost of the damage but know that "it's going to be high," up to \$41 million, spokeswoman Sandy Miller Hays said yesterday. "We're all still sort of in shock," she said.

The rare category F3 tornado first set down in rural Virginia but didn't pick up truly destructive momentum until it crossed into Maryland. In College Park, it killed two University of Maryland students and tore up nearly \$15 million of campus property, then went on to damage or destroy scores of homes all the way to Columbia.

State officials are completing dam-

age calculations. Prince George's County officials report more than \$16 million in damage there.

With a staff of 1,400, the Beltsville center is considered the flagship research center for the U.S. Department of Agriculture, home of scientific study of crop cultivation, livestock development and human nutrition.

All the serious damage at the center occurred on the west side of Route 1, where plant science operations are located.

Hays said that the tornado twisted the metal frames of many greenhouses used for research. "It's not simply a case of replacing the glass," she said.

Fifty vehicles were damaged or destroyed. And several beloved willow oaks, some of them 80 years old, were ripped out of the ground or snapped

in pieces. "You can't put a dollar amount on that," Hays said.

No one at the center was injured, because most people had left before the tornado hit at 5:40 p.m., Hays said. In some of the older buildings, window air conditioning units were popped out of their frames and thrown into offices. "They're right by people's desks. It could have been absolutely horrible," she said.

Many researchers have lost years of work. Plant research "is a slow process," Hays said. "Imagine if not only your lab is destroyed but maybe this research you've spent years working on."

The center's livestock—including cattle, sheep and pigs—is on the untouched east side of Route 1, and none were injured.

USDA Center Twisted by Tornado

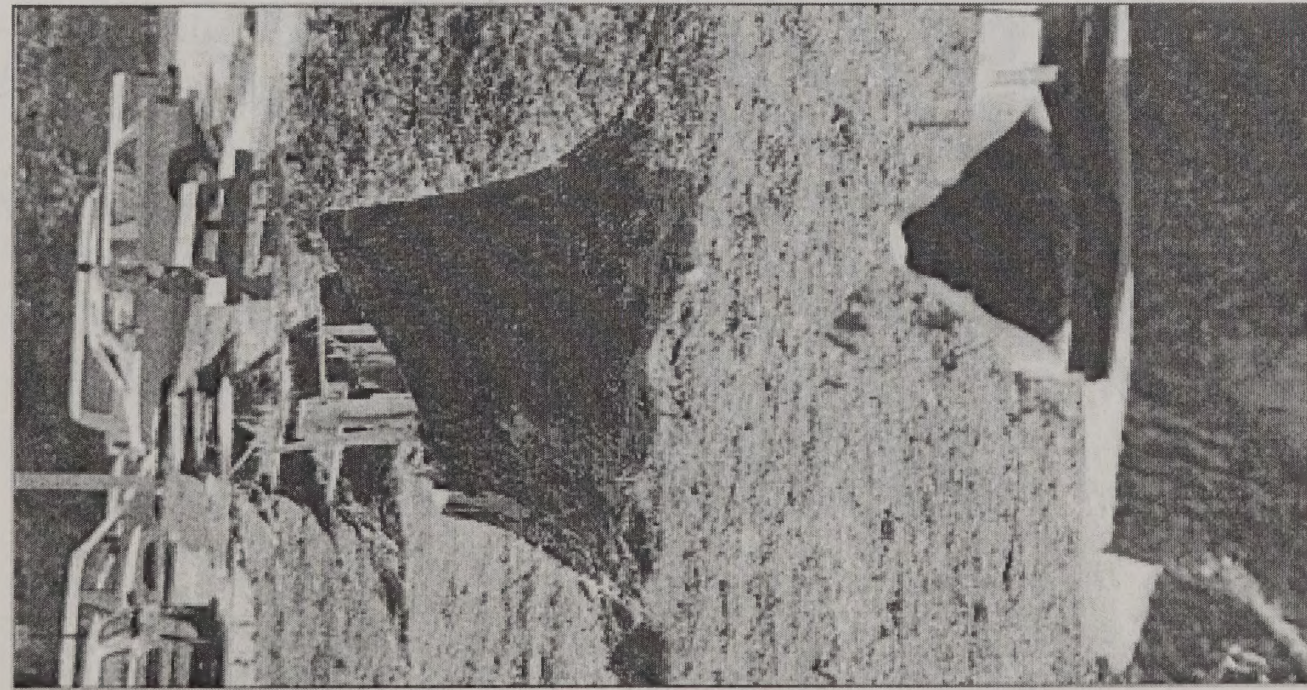


PHOTO BY MARK GALE—THE WASHINGTON POST

Beltsville Research Facility, Neighbors Begin Cleanup

By EUGENE L. MEYER

Washington Post Staff Writer

The lawns at the Beltsville Agricultural Research Center off Route 1 are stripped of trees. Pieces of slate and shards of glass are everywhere on the grounds. The tower clock on top of the main building had two of its four faces blown out—the two left are frozen in time at 5:27.

That's when the tornado hit on Sept. 24.

If only the twister had touched down a half-mile west, the damage at the federal facility would have been limited to field crops already at the end of their season.

But it didn't, and more than two weeks later the U.S. Agriculture Department's premier research center is still reeling from the damage, with cost estimates ranging from \$30 million to more than \$40 million. That includes \$3 million for lost lab equipment, chemicals and vehicles.

Yet, the numbers don't tell the whole story.

To better appreciate the force of nature that struck in the early evening of Sept. 24, take a tour with Phyllis Johnson, the director of BARC for the past five years and a native of North Dakota, where they know about tornadoes.

"As a child in the '50s," she said, "the first thing I remember seeing when we got our first TV was tornado damage in Fargo, and I've been scared of tornadoes ever since. I've spent many hours in the basement when tornadoes came through; the corner of one came through our back yard. But this is beyond anything I've seen myself for real. This is just heartbreaking."

BARC has 1,300 employees, and 500 of them work in the storm-struck area west of Route 1. "We had one guy sitting in his office," Johnson said. "He looked out the window, saw the weather was bad and decided to go into the interior of the building. Nanoseconds later, the window blew out, and also his door."

Although the same tornado killed two students in nearby College Park, miraculously no one at BARC was killed or injured, because the tornado struck there after almost everyone—even director Johnson—had already left work. An alarming phone message was waiting for her at home in Severn. She turned around and drove right back to see what had happened.

Eighty-five vehicles had been damaged, 20 of them totaled. Most window air-conditioners blew out of their frames into the middle of the rooms. Behind the main building, a double row of

willow oaks, planted in 1939 when the place was new, were all gone. A 100-year-old elm with a trunk four feet wide was blown over. But that was the least of it.

Many of the greenhouses—where tens of thousands of plants for research are carefully cultivated, grown, studied, sheltered from the weather—were destroyed, their frames twisted, their glass panes shattered.

"We have so much broken glass in the greenhouses, we're allowing people in only in pairs and in hard hats," Johnson said. The storm blew fans and vents off roofs and onto the surrounding ground. Wind-driven slate lodged deep in a concrete wall, still stuck even now.

Last week, "NO" was painted in large letters on those green houses that must be further demolished and replaced. Among them was one numbered GH-6, managed by Tina Gouin.

"That's my greenhouse over there," she said from the cab of a pickup truck. "The one with the roof missing." The greenhouse contained 4,000 citrus plants, a third of them lost. But not only plants were lost. "We lost about four experiments that took one-and-one-half to two years to set up."

Of 40 greenhouses, 10 were so badly damaged they will have to be replaced. Another 20 suffered to a lesser degree. Meanwhile, there's the issue of what to do with the plants that survived. Some greenhouses are covered in places with blue polyethylene plastic, to keep out the cold.

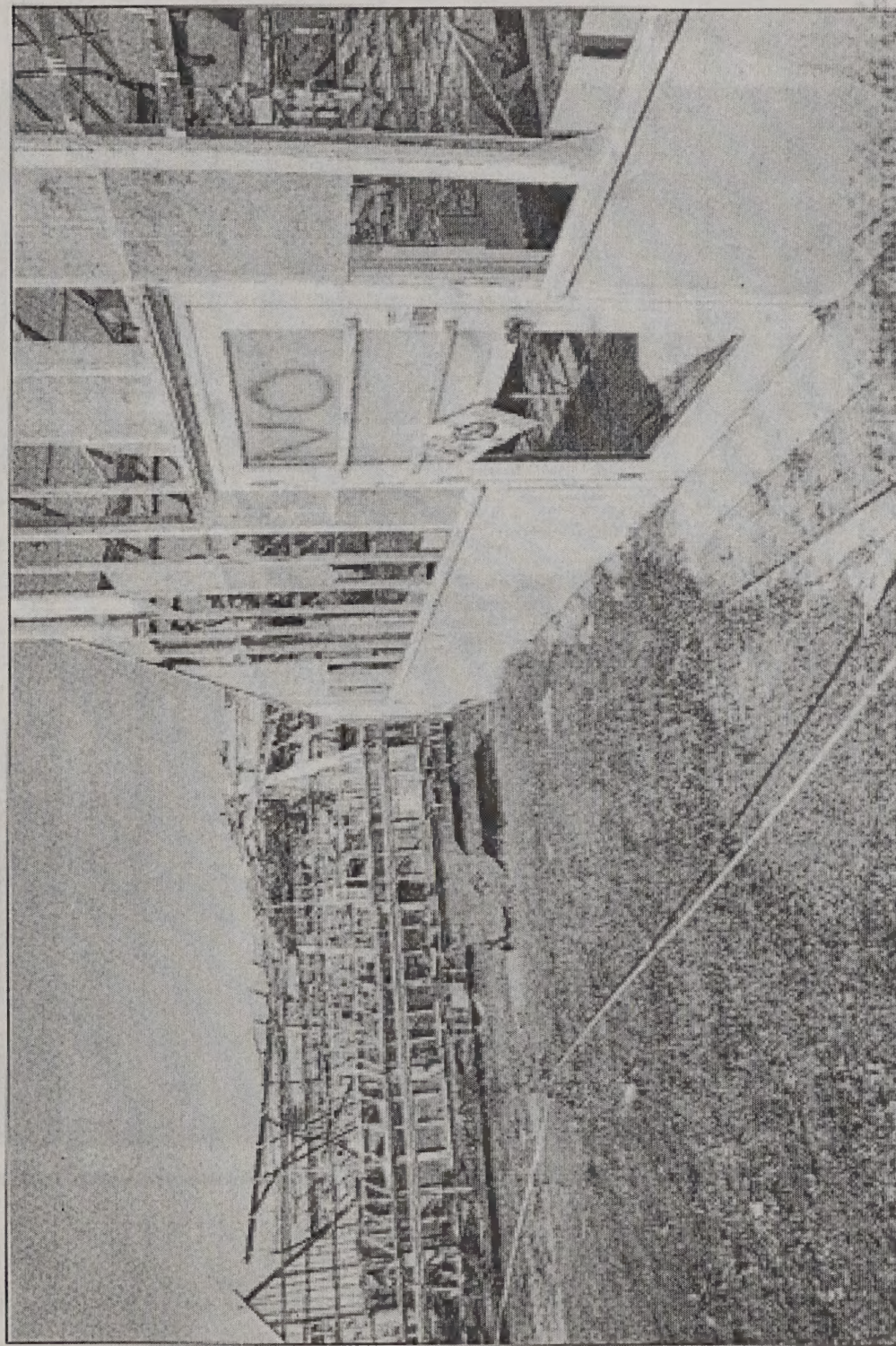
Many plants are being moved to temporary quarters, in private nurseries or elsewhere on site. Some are going to the National Arboretum for safekeeping. There were 30,000 potato plants in two damaged greenhouses; all need to be moved somewhere so the cold won't kill them.

The tornado hopped from place to place in the Route 1 corridor, whimsically touching down in some areas and missing others entirely. The twister didn't touch the large swath of the research center east of Route 1, where there are acres of forests and wildlife and livestock.

It took a line of trees at the northern border west of Route 1 that had formerly screened BARC from neighboring apartments, and it hit hard a largely residential area between Powder Mill and Montgomery roads.

The day after the twister, the maintenance people at the agricultural research center had been kept busy changing tires flattened by glass and nails scattered around. One pickup had 12 flats in three days. For a while, employee cars were kept off the grounds, to avoid getting flats.

Only stumps remain, above, of a row of willow oak trees that lined First Street at the research center. At right, greenhouses on the grounds of the center were especially vulnerable to the Sept. 24 tornado. Ten of them will have to be replaced.



grounds, to avoid getting flats.

For several days after, the sounds of chain saws could be heard at BARC. But a week after the twister, there was silence, Johnson said, "because all the blades on the saws and wood-grinders were worn out and had to be replaced."

At First Street and Range 2 Drive, behind the main building, street signs are askew. Not far away, a picnic table is not just overturned but ripped apart. One structure that survived with just its front door blown out is the Bio-Science Building, built in the 1970s without windows to conserve energy.

Despite all the damage, Johnson counts herself and her colleagues lucky. Trained as a chemist and a nutritionist before becoming an administrator, her sense of the agency's scientific mission is strong. "You really feel you're making a difference," she said. "That's what keeps people here going, even in the face of this."

Nearby neighborhoods also were still cutting their way out. Along many streets, chain saws were still in action last week, and stacks of newly cut wood lined the curbs. Many roofs had blue plastic covering holes or bare spots.

"I had to saw my way out of the back door," said Walter H. Mahoney, a member of the Prince George's County Council who lives on a cul-de-sac at the end of Lorraine Avenue. "My wife and I were down in the basement. It was kind of like a quiet bomb blow."

At the corner of Howard Road and Bramble Lane, one house has an American flag in the window and an "unsafe for habitation" sticker on the door. An attached garage has flattened,



PHOTOGRAPH BY THE WASHINGTON POST

Phyllis Johnson, director of the Beltsville Agricultural Research Center and a native of North Dakota, says the damage from the Sept. 21 tornado "is beyond anything I've ever seen."

to 20 trees, and he has estimates ranging from \$12,000 to \$25,000 to get rid of them. In his Forest Acres neighborhood, he said, it all seems so incongruous.

"It's just a lovely neighborhood," he said. "It's just the last thing you'd expect to see here. It's just a real nice area and it's just a real nice area."

"I had to saw my way out of the back door," said Walter H. Maloney, a member of the Prince George's County Council who lives on a cul de sac at the end of Lorraine Avenue. "My wife and I were down in the basement. It was kind of like a quick buzz saw."

At the corner of Howard Road and Brandon Lane, one house has an American flag in the window and an "unsafe for habitation" sticker on the door. An attached garage lies flattened, with a new silver Mercedes poking out of the wreckage.

Across the street, Sister Pat Bennett shows a visitor two "new skylights" in the house she rents, one each in the dining and bedroom. A huge tree uprooted in the front yard just missed her car. The back yard is full of downed trees awaiting removal.

"We heard the freight train, and we heard the whistle, and we flew to the basement," Bennett said. "I tell you, I was five years in Nigeria and I never saw anything like this. It looks like a war zone, like a helicopter flew by with shears."

Her landlord lives a block away, in a house untouched by the storm. Robert Yaklich moved to the neighborhood in 1972, first into the home Bennett now occupies. That was when he came to work for the Beltsville Agricultural Research Center.

Yaklich, a research scientist working with soybeans, was out of town when the twister hit. His office windows in BARC Building 6 blew out. "It pretty well messed up my office," he said. "It stopped me for a week, because the computers were down."

Now he's back at work but still sifting through the damage to his residential property closer to home. He figures he has lost 60 to 80 trees, and he has estimates ranging from \$12,000 to \$35,000 to get rid of them. In his Home Acres neighborhood, he said, it all seems so incongruous.

"It's just a lovely neighborhood," he said. "It's just the last thing in the world you'd ever expect. We just put a new roof on that house, and a tree went through in two places."

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NEWS & RECORD

Greensboro, North Carolina

Friday, September 28, 2001

50 CENTS

Tornado damaged U.S. agricultural research complex

WASHINGTON — A tornado that struck suburban Washington caused as much as \$41 million in damage to the government's largest agricultural research facility, disrupting studies on everything from soybean genetics to exotic citrus diseases, officials said Thursday.

The Agriculture Department facility in Beltsville, Md., employs 1,300 people, including 325 scientists. None were hurt, said Ron Kercak, associate director.

But its greenhouses, which cover 100,000 square feet, received varying degrees of damage, and a third were destroyed, Kercak said. Fifteen buildings that house laboratories and offices also were damaged. In one of the labs that was damaged, USDA scientists have been mapping the genetic code of soybean plants.

Damage to the greenhouses and buildings was estimated at \$38 million, Kercak said. There was another \$3 million in damage to government vehicles and laboratory equipment and supplies, he said. Livestock facilities were not harmed.

Monday's storm killed two students on the nearby University of Maryland campus and left more than 1,000 people homeless.

Tornado destroys labs, greenhouses at BARC

By CAROL KINSLEY

A tornado ripped through the USDA facility at Beltsville, Md., on Sept. 25, destroying several greenhouses and interrupting many research projects.

"There was not a single program on plants that was not affected," said Rob Griesbach, a research geneticist in the Floral and Nursery

Plant Research Unit.

The tornado was an "equal opportunity" destructive force, Griesbach said. Researchers who did not see damage to their greenhouse space had their labs ruined and equipment damaged.

Fortunately, no plants were lost, as they were moved into other buildings. Even the plants under citrus quarantine were moved to another

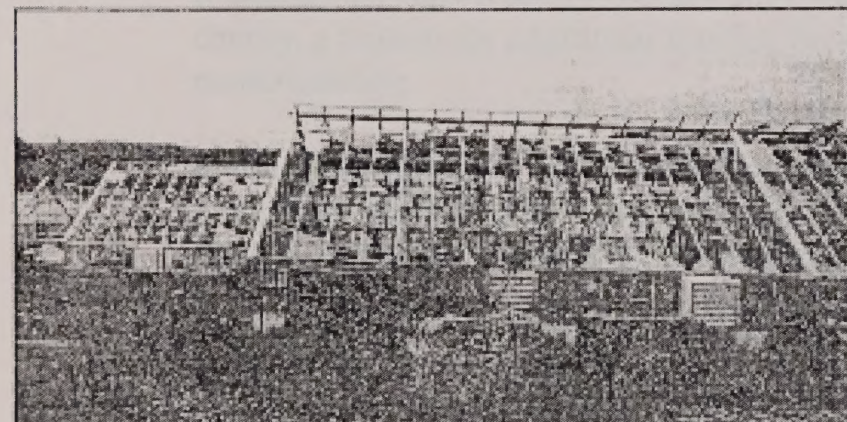
location. In the vegetable lab, tomato and pepper breeding programs were affected, as was the potato pathology work. Ornamental research work in pathology, breeding, germplasm and entomology are temporarily out of commission. Also affected was group work on photosynthesis and mineral nutrition, the nematology

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Some of the greenhouses in Beltsville, Md., were totally destroyed.



Other structures are missing a lot of glass. (Photos courtesy USDA)

Tornado ...

Continued from Page 1

lab, the soy breeding and forage work. In food quality and nutrition, the preserved foods labs were hit.

Work continues, despite the loss of greenhouse space. Scientists are sharing lab space. "We grouped together and moved on," Griesbach said. Some work has had to be rescheduled for another season.

About 30,000 square feet of greenhouse space in use at the time of the tornado were totally destroyed. Of the remaining 130,000 square feet, there was severe to slight damage, mostly broken glass with some frame damage.

Griesbach described the physical damage of the west complex between Route 1 and the Beltway.

"The West Complex is a group of buildings around Route 1. Below them are three sets of greenhouses, then fields. The tornado went right between the buildings and the greenhouses, touching down on both.

"The buildings on Route 1 are well-built. The walls are concrete a foot thick with reinforced cement. The tornado blew the windows out and caused a lot of equipment damage in the labs.

"These are historic buildings with slate tile roofs. The tiles measure 1 foot by 1 foot. They were blown off at 200 miles per hour and caused extensive glass damage."

Range 1, the upper set of greenhouses, is one of the older ranges. There is no glass remaining in any of the frames. Several of the structures are twisted, Griesbach said. "It's totalled. There are no plans to refurbish."

At Range 2, the more modern, computer-controlled greenhouses lost about 25 percent of their glass — about 1,000 panes. "We're placing that now," Griesbach said. "We

should be finished by next year. Meanwhile, we're using plastic, moving plants and making do."

Some of the windows require special glass and will take longer. The labs are mostly clean, but outside, there is glass everywhere. Eighty vehicles that were on site lost 90 percent of their glass.

"These tiles are amazing," Griesbach said. "Spinning at that speed, they damaged plants. Some disintegrated, leaving pieces in brick walls and in trees."

Long-term plans are to clean up the debris and, if and when money is available, build new greenhouses. Estimated costs just for the greenhouses are \$11 million for new greenhouses, \$1.25 million to repair damaged greenhouses and about \$1.75 million to demolish the destroyed greenhouses.

Of all the large, mature trees at the facility, only one remains. Ninety-eight percent of the trees are gone.

A landscape committee, headed by Tom Elias, is in charge of redoing the landscape design for the whole complex. What was once hedge-podge will now be designed from scratch. One building will be planted with only USDA releases, dating back to the 1800s. A ceremonial tree planting was held Oct. 24 with a 3-inch caliper maple tree from Holland Gardens, a nearby nursery which also was hit by the twister.

A group, Friends of Agricultural Research-Beltsville Inc. (FAR-B), is accepting contributions to aid in the landscape restoration. They are accepting only financial contributions at present, but when plans are complete, they will be making known a "wish list" for those who want to donate in-kind.

Those who wish to offer help in that way, or who wish to send a check, may reach FAR-B at P.O. Box 1061, Beltsville, MD 20704.

EASTERN SHORE GROWERS



The BARC Tornado

Sept. 24, 2001

On Sept. 24, 2001, BARC was hit by an F-3 tornado with winds of 200 mph at approximately 5:30 pm. Fortunately, there were no injuries, but damage to facilities and research programs was substantial.

Roofs of all buildings at BARC-West were damaged, there was laboratory damage within buildings, and three acres of greenhouse space was damaged. Half of the greenhouse space was destroyed.

Limited funds (~\$1.5 million) were available at the end of the fiscal year for emergency repairs. Most of these funds came through ARS headquarters from locations around the country. Current estimates for damage in addition to that are about \$20 million. Three million of this is from losses of reagents, laboratory equipment, and vehicles. The remainder is damage to facilities.

The FY02 appropriation bill has been signed by the President. It provides no additional funds for tornado recovery at BARC. BARC has been directed to use its Renaissance 93 Fund (Repair and Maintenance), a \$3 million Building and Facility appropriation that was originally intended to build new poultry facilities, and \$3.8 million in Headquarters R&M funds to repair damage. The Ren 93 fund totals \$2.3 million, some of which *must* be spent on other critical needs, including security enhancements following Sept. 11. Thus, BARC will have less than \$9 million in FY02 to meet a \$20 M need. Furthermore, the reconstruction will come at the expense of other critically needed R&M and modernization activities. After the above funds are obligated, there will be about \$8.9 M in unfunded needs for new greenhouse construction and grounds repair remaining as a result of the tornado. None of the available funds can be spent on the \$3 million in non-facility damages.

It will not be known until February 2002 whether the President's budget request for FY03 will contain a request for additional funding for facilities at BARC for either tornado recovery or modernization.

Research programs of 75-100 scientists at BARC-W were affected by tornado damage. Of scientists reporting research setbacks, the median delay in research is 6 months, the mean is 10 months, and a few scientists reported losing two to three years of work.

Henry A. Wallace Beltsville Agricultural Research Center

The Henry A. Wallace Beltsville Agricultural Research Center (commonly called BARC) is the flagship location of the USDA Agricultural Research Service (ARS). BARC is programmatically the largest and most comprehensive agricultural research center in the world. It has been a destination for visiting scientists since it was founded in 1910.

BARC research covers every area of plant science, entomology, animal science, food safety, food technology, biotechnology, environment and natural resources, and human nutrition. There are more than 300 PhD scientists on the permanent BARC staff, and about 100 additional post docs and visiting scientists, as well as more than 200 undergraduate and graduate students and 700-800 laboratory support staff. BARC also includes the US National Arboretum, which has research facilities in Beltsville in addition to its public gardens in Washington, DC.

One of BARC's great strengths is its ability to attack large problems with a holistic approach, drawing upon scientists from every discipline relevant to agriculture. In addition to the diverse BARC staff, there is the opportunity for collaboration with other Federal and academic research institutions in the Washington metro area.

Within ARS, BARC scientists produce about twice as many scientific papers per year and papers per dollar of funding as scientists in the rest of the agency. Scientists in ARS are promoted on the basis of demonstrated impact of their research in solving problems; BARC scientists are consistently promoted at a rate 1.5-2 times greater than the average in the rest of ARS.

Summary of basic facts

FY 01 budget	\$117 million
Permanent PhD scientists	309
Visiting Scientists	Approx 50 at any one time; 100/year
Post docs	50
Total workforce	approx 1700
BARC acreage	6,615
USNA acreage	444
Total space (before tornado)	1,035,000 square feet
Lab & Office	66%
Animal facilities	15%
Greenhouse (before tornado)	9% 90,000 sq. ft.
Infrastructure	10%

Design Intent

USDA ARS Beltsville Area

Buildings 002, 003,004

December 2001

General Considerations:

The planting plan is for all three buildings 002, 003, and 004 although the drawing only depicts buildings 002 and 003. Building 004 and its physically-challenged accessibility area are a mirror image of 002 with some on-site adjustment to correct for utilities.

This plan calls for the removal of all plants in the planting beds in front of 003. The two *Lagerstroemia* that exist in the boulevard tree lawn shall remain.

It is highly recommended that an irrigation design be completed and installed in the planting areas in this design either prior to planting or along with planting.

Design Considerations:

The design for these buildings was done with the following in mind:

Simplicity and symmetry of design to harmonize with the formal, symmetrical, and simple designs of the buildings. The plants are not to block views of the buildings; they are to veil the buildings and frame them.

Simplicity of maintenance.

Security. Plants have been chosen and spaced so the landscape remains open to views by personnel, yet aesthetically pleasing.

Emphasis on U.S. National Arboretum plant releases. Many of the plants in the design were introduced by the Arboretum.

Combinations of plants were chosen to give flower and/or foliage interest to all four seasons.

Plants with white flowers were chosen to keep the design simple and not to clash with the buildings. The exception to this is *Hamamelis x intermedia* 'Jelena' which has orange flowers. It blooms at a time when nothing else is flowering and its color compliments the color of the brick building.

Plants should not be planted too big so that they can grow into the awkward spaces of the site and to avoid utilities.

Design Function for Specific Plants:

Ulmus americana 'Valley Forge' - qty. 2

The function of these two plants is to frame the entire 002, 003, and 004 complex. The eventual large size of the trees will help bring the space to a human scale when walking on the sidewalks. *U. americana* 'New Harmony' will also work as a substitute.

Size 2" caliper

Ilex Dragon Lady® - qty. 20

These hollies are pyramidal / columnar in nature and mature to a height of 10' - 12'.

They will be planted between the windows of 002 and 004 to soften the cement of the lowest floor of the buildings. They should not block the windows and should be planted far enough away from the buildings so that, at maturity, there is open space between the building and the plant for security sake.

5' - 6' b&b

Ilex 'Blue Stallion' - qty. 4

These hollies serve the same purpose as the previous hollies. These are the male plants that will be the pollinators for the female plants.

3 or 5 gallon

Hamamelis x intermedia 'Jelena' - qty. 2

These deciduous shrubs will accent the corners of buildings 002 and 004. Their orange fall color and fragrant orange flowers will compliment the buildings. Their horizontal branching structure will carry through to the viburnums in front of 003.

5 gallon or b&b

Ilex x attenuata 'Foster's #2' - qty. 10

Loosely pyramidal in nature. These plants will serve as an evergreen background for the deciduous material in front of 003. In front of 002 and 004 they will tie the two plantings (003 with 002 and 004) together. In front of 002 and 004 they will serve as a frame for the entrances of the buildings. Another tall, pyramidal, female holly would be an acceptable substitute with approval from the landscape committee.

5' to 6' b&b

Hibiscus syriacus 'Diana' - qty. 10

In front of 002 and 004 they will be a bright focal point for the entrances of the buildings. In front of 003 they will provide a mass of summer color in the front of the planting beds. These plants should be treated as cut-back shrubs; stumped back to about one foot every spring so they do not get too big and over-dominate the landscape.

3 to 5 gallon

Lagerstroemia 'Natchez' - qty. 4

These crape myrtles will frame the entrances of the buildings from a distance. They will also carry a line of crape myrtles through with the two that exist already. Another white-flowering crape myrtle that is an Arboretum introduction will be an acceptable substitute with committee approval.

8' to 10' b&b

Chionanthus retusus - qty. 2

Selection of these Chinese fringe trees is important as they should be multi-stemmed, male plants. Their rounded, spreading habit will help shade the cemented physically-challenged accessibility area. The white flowers, yellow fall color will add beauty to the site as well. Male plants will not produce berries which could be a maintenance headache and be a hazard for wheelchairs etc.

5' to 6' b&b

Juniperus conferta 'Blue Lagoon' - qty. 30

These junipers will cover an awkward space for maintenance in the accessibility areas. In front of 003, north side, they will mask the face of the utility pit. The south side is a mirror of the north side for symmetry.

1 gallon

Magnolia virginiana var. *australis* - qty. 2

An Arboretum introduction 'Satellite' would be nice for this spot, but availability may be a problem. A multi-stemmed plant is required. This is a tough planting site as it is basically a large container. The sweet bay magnolia is a plant that can grow well in a site such as this one. Its semi-evergreen habit will soften the site and the building and its fragrant flowers will be attractive and pleasant in the summertime.

5' to 6' b&b

Itea virginica - qty. 6

Any hardy, non-dwarf cultivar of Virginia sweet spire is acceptable for this site. This containerized spot is not ideal for most plants to mature. However, *Itea virginica* can thrive in a site such as this. Its white fragrant flowers will be attractive in this site and its red fall foliage and winter stems will extend the season of interest.

2 gallons

Malus 'Adirondack' - qty. 6

These crabapples will help give purpose to the curve in the sidewalk and bring the scale of the building to a human one as people approach the entrance of 003. Their white flowers will be highly attractive in the spring and orange/red fruit will compliment the brick of the building in the winter months.

5' to 6' b&b

Viburnum plicatum f. tomentosum 'Shasta' - qty. 6

These plants will take up mass in the planting beds. They will have spring interest with white flowers and autumn interest with red fruit. Their horizontal branching structure will help balance the strong vertical design of the building
5 gallons

Camellia oleifera 'Lu Shan Snow' - qty. 2

Flowering in late fall, these plants will be a delightful accent for people to view from the porch area of 003. They should thrive in the shade behind the southern magnolias.
3 gallons

Magnolia grandiflora - qty. 2

These evergreen trees fit the architecture of the buildings perfectly. They will frame the entrance to 003 and bring the building to a human scale and serve as a focal point and accent. They will have fragrant white flowers in summer that will make the entrance more delightful. Any broad spreading cultivar will be appropriate.
8' to 10' or 10' to 12' b&b

Annual bed - 2

These beds on either side of the entrance of 003 will create a focal point and help accent the entrance. After many years, as the magnolias mature, these areas can fade away as the magnolias fulfill their design roll.

Planting beds - Building 003

Swaths of perennial groundcovers should be established. Plants that only need to be cut back once a year and can tolerate dry shade should be used. *Helleborus orientalis*, *Carex plantaginea*, and *Epimedium sp.* are recommended. Beneath the sweet bay magnolia (in the contained area) *Liriope spicata* should be used. Mulch should be used in the sweet spire containers.

Epimedium sp. - 650, 4" containers (350 on the north side bed of 003 and 300 on the south) on 18" centers

Carex plantaginea - 650, 4" containers (350 on the north side bed of 003 and 300 on the south) on 18" centers

Helleborus orientalis - 370, 4" containers (200 on the north side bed of 003 and 170 on the south) on 42" centers

Liriope spicata - 230, 4" containers (115 on each side) on 12" centers

Planting beds - Buildings 002 and 004

Currently, no planting beds exist. They should be created as suggested by the design and should be mulched for ease of maintenance. Currently the awkward spaces make mowing difficult.

1. *Chlorophyll a* (Chlorophyll *a*) - 100%
This plant will not grow in the plant of 100%. This will have an effect on the plant
which leaves and stems in the plant of 100%. This plant will have an effect on the plant
help to have the plant of 100%.

2. *Chlorophyll b* (Chlorophyll *b*) - 100%
This plant will not grow in the plant of 100%. This will have an effect on the plant
which leaves and stems in the plant of 100%. This plant will have an effect on the plant
help to have the plant of 100%.

3. *Chlorophyll c* (Chlorophyll *c*) - 100%
This plant will not grow in the plant of 100%. This will have an effect on the plant
which leaves and stems in the plant of 100%. This plant will have an effect on the plant
help to have the plant of 100%.

4. *Chlorophyll d* (Chlorophyll *d*) - 100%
This plant will not grow in the plant of 100%. This will have an effect on the plant
which leaves and stems in the plant of 100%. This plant will have an effect on the plant
help to have the plant of 100%.

5. *Chlorophyll e* (Chlorophyll *e*) - 100%
This plant will not grow in the plant of 100%. This will have an effect on the plant
which leaves and stems in the plant of 100%. This plant will have an effect on the plant
help to have the plant of 100%.

6. *Chlorophyll f* (Chlorophyll *f*) - 100%
This plant will not grow in the plant of 100%. This will have an effect on the plant
which leaves and stems in the plant of 100%. This plant will have an effect on the plant
help to have the plant of 100%.

Report given by Al Stoner 03/11/02

FAR-B expenditures to date

\$5,000.00 - Holland Gardens, Beltsville, MD

(Digging & moving 22 plants in front of Bldg 003)

\$58.00 - Behnke Nursery, Beltsville, MD

(2 camellias - discounted 20%)

\$88.69 - Plant Development Services Inc - Loxley, Al

(Shipping cost for 30 donated Junipers - est \$600 donation)

\$730.00 - Moon Nursery, Chesapeake City, MD

(10 hibiscus & 4 Malus)

\$1,200 est - Black Creek Nursery, Brandywine, MD

(10 holly & 4 crepe myrtle, Black Creek is going to donate the delivery)

\$750.00 - The Botany Shop, MO

(15 elms for fall 2002 delivery)

\$7826.69

No cost - ArborWholesale, Spencerville, MD

(6 Itea, 6 viburnum, 2 magnolia, 4 holly - est **\$3,000 donation**)

- Angelica Nursery, Kennedyville, MD

(20 holly, 10 willow oak, & 6 crabapple - **\$5,074 donation**)

Thus FAR-B's efforts and funding have resulted in the acquisition of 129 and relocation of 22 plants. The estimated retail value of the 129 acquired plants is in excess of \$15,000. An additional 100+ plants have been or can be acquired from the National Arboretum.

Remaining needs for area east of 1st Street (except for the North & South borders).

2 witch hazel & 3 or 4 "specimen" plants for east side of Circle Dr.

Trees available free from the Montgomery Community College if we can get them dug and moved. The College plans to destroy the material soon if we do not take them.

8 - "Prospector" elm - all 6" caliper & 12' or more in height

3 - sugar maple - " " " " " " "

2 - river birch - " " " " " " "

4 - honey locust - 2" caliper

4 - "Freeman" red maple - 1 1/2 - 1 3/4" caliper

1 - Kentucky coffee tree - 3- 4" caliper, approx 20' tall

Ace Tree Movers will dig and ball and burlap the 13 elm, sugar maple & birch for \$225 @ and the 9 smaller trees for \$85 @ for a total of \$3690. For an additional \$1850, or a total cost of \$5,540, Ace will deliver the trees to Beltsville.

The 13 elm, sugar maple & birch are all "specimen" trees that would retail for \$1,500 - \$2,000 @, if they could be found. Thus, the estimated retail value of the 22 trees is at least \$20,000. Because the trees will break dormancy soon and Ace is entering their busiest season, there is urgency in moving them, if we can acquire them.

In addition, Holland Nursery will dig and deliver from Glenn Dale a "specimen" Mongolian oak for \$250 & 10-12 Cercis and other trees for \$60.00 @. It will be possible to dig some smaller trees and shrubs at Glenn Dale using the tree spade owned by the National Arboretum.

*Show place
need hort expertise to take care of new plants + trees*

BARC Landscape Planning Committee Status Report to FAR-B Board
Allan K. Stoner - Feb 12, 2002

Plans have been completed for landscaping the following areas:

- Front of Buildings 002-003-004
- Between Buildings 001 & 002
- Between Buildings 004 & 005
- Northeast corner of Bldg 005
- 1st street
- Beds around 2 signs on the front lawn
- South property boundary
- North property boundary

Areas still being discussed include:

- Around Buildings 006, 007, 009, 011A, & 046-049; lower end of range one; and north side of range 4.

The 20 plants that remained in front of Building 003 after the tornado, have been removed and all have been transplanted between Buildings 001 & 002, or in the vicinity of Buildings 005 & 010A. The \$5,000 FAR-B provided for digging and moving the plants was money very well spent. Holland Nursery had the equipment and manpower to complete the task in 2 days.

The plans developed by the Landscape Planning Committee thus far, call for 165 trees or shrubs for the front of Buildings 002-003-004 (110), between Buildings 001 & 002 (17), between Buildings 004 & 005 (17), and along 1st street (21). FAR-B representatives have contacted 6 nurseries and gotten commitments for acquiring 108 of the plants at a total cost of less than \$1,000. The estimated wholesale value of the 108 plants is approximately \$6,000 (retail = \$12,000-15,000). The National Arboretum Gardens and Research Units have contributed 35 plants, leaving only 22 that we are trying to identify sources for. It is important to note that we are getting the species and cultivars we want, as well as the desired size and quality of plants.

Except for 30 junipers that are being shipped by the Alabama nursery that donated them, all of the plants acquired by FAR-B, either have been picked up by BARC Roads & Grounds and National Arboretum personnel or will be soon.

To date, the 20 plants removed from the front of Building 003 and approximately 20 plants from the Arboretum have been transplanted. Also, a plant purchased by the Nutrient Data Laboratory was planted in front of Building 005. If the ground does not freeze and assurance can be obtained that it will no longer be necessary for construction equipment to be parked in the beds, planting in front of 002-003-004 and between 004 & 005 will start soon. The newly acquired plants, and those being transplanted, will be labeled with appropriate identifying information.

Plants remaining to be acquired are:

- 10 - "Valley Forge" elms (8 for 1st street & 2 for the front of 002-003-004)
- 2 - "Jelena" Hamamelis for the front of 002-003-004

10 - assorted plants for between 004 & 005 (est total cost = \$800)

Although a preliminary plan has been developed for the south property boundary, the final plan is contingent upon issues related to the replacement of the damaged fence. A possibility exists that arrangements can be made with IKEA for them to purchase the plant material for the BARC side of the fence. There is also a possibility that the BARC Landscape Committee will have an opportunity to design, or have input into the design of, the 20 -30 feet of landscaped area IKEA plans to develop on the south side of the fence.

The plan for replanting the north boundary includes shade trees and flowering shrubs native to Maryland. The exact species and number of plants have not been fully determined. Due to the capacity of the Roads & Grounds personnel to care for new plantings, the north boundary may not be planted in 2002 even if there are resources to acquire all or some of the plants. Although plans have not been completed for some areas (i.e. 011A, 006 etc.), the committee anticipates that a sufficient number of "surplus" plants at BARC and the Arboretum will be available to meet these needs. Also, the Montgomery County Community College has offered to donate any or all of the plants currently in their physical plant nursery, if we will dig and move them. Apparently, they have a lot of very desirable plants in the nursery that they need to get rid of. This opportunity is being investigated.

